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ABSTRACT

House Bill 85 of the 74th Texas Legislature directed the Texas Higher Education Coordinating Board to formulate a Distance Learning Master Plan for the development of distance learning and other applications of instructional electronic technology by institutions of higher education. The Plan is to address: coordination and integration of distance learning among higher education institutions and other entities; development and acquisition of infrastructure and equipment with establishment of standards and training for staff; appropriate applications and needs assessment; funding policies and regulatory or other policies desirable to promote distance learning; and any related issues to recommendation the Board considers appropriate. During 1994-95, approximately 50,000 students participated in 800 courses offered through institutional telecommunications by 70 Texas public institutions of higher education and these numbers are growing. The proliferation of distance learning delivery systems has created the capability for many institutions to reach beyond their traditional service areas and that complicates the relationships between institutions within the state and also results in Texas institutions facing competition from out-of-state institutions. Furthermore, enhanced access to information resources is critical to the academically sound development and expansion of distance learning and faculty must receive adequate training and support. (JLS)

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ED 401 804

Master Plan for Distance Learning:
An Evolving Technological Process

In Response to House Bill 85 of the 74th Texas Legislature

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Texas Higher Education Coordinating Board

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Table of Contents

Executive Summary 3

Introduction 7
- Directive 7
- Advisory Committee and Development Procedure 8
- The Changing Nature of Higher Education 9
- Distance Learning in Texas Public Higher Education 10
  - Current Status and Near Term 10
  - Long Term 12

Program Development and Coordination 14
- The Regulatory Dilemma 14
- Statewide Academic Coordination 15
- Regional, Statewide, and Multi-State Collaboration 17
- The Need for Information 18
- Recommendations (Program Development) 18

Technology 21
- Connection and Communication 21
- Infrastructure 23
- Access to Expertise in Distance Learning Technologies and Applications . . . 24
- Recommendations (Technology) 24

Funding and Financial Issues 26
- Costs of Distance Learning 26
- Financial Support for Distance Learning 27
- Apples and Oranges: Comparing Costs 28
- Recommendations (Funding) 29

Faculty and Support Staff 30
- Faculty and Staff Training and Development 30
- Faculty Release Time, Compensation, Intellectual Property Rights, Promotion and Tenure 31
- Sharing Resources for Faculty and Staff Development 32
- Recommendations (Faculty and Support Staff) 32

Support Services for Distant Learners 34
- Obligations 34
- Institutional Planning for Student Support Services 35
- Diverse Needs, Diverse Purposes 35
- What Student Support Services are Needed? 36

Current Status, Necessary Choices 37
Support Service Fees for Distant Learners 38
Recommendations (Student Support) 38

Evaluation and Research 40
Evaluation 40
Research 41
Recommendations (Evaluation and Research) 41

Consolidated Recommendations 42
Recommendations to the Texas Legislature 42
Recommendations to the Coordinating Board 43
Recommendations to Institutions 44
Recommendations to the TIF Board 46
Additional Recommendations 47

Appendix I 48
House Bill No. 85 of the 74th Texas Legislature

Appendix II 50
Distance Learning Master Plan Advisory Committee 50

Appendix III 52
Commissioner's Charge to the Committee 52

Appendix IV 53
Appropriations Rider to House Bill 1 of the 74th Texas Legislature 53

Appendix V 54
Instructional Telecommunications Status Report
Universities and Health Science Centers 54
Community and Technical Colleges 61

Executive Summary

House Bill 85 of the 74th Texas Legislature directed the Coordinating Board to formulate a Distance Learning Master Plan " . . . for the development of distance learning and other applications of instructional electronic technology by institutions of higher education." The plan is to address:

- coordination and integration of distance learning among higher education institutions and other entities;
- development and acquisition of infrastructure and equipment; the establishment of uniform or compatible standards and technologies for distance learning; training of faculty and staff;
- appropriate applications and needs assessment;
- funding policies; regulatory policies; statutory or regulatory changes desirable to promote distance learning;
- any related issues or recommendations the Board considered appropriate.

This document is in response to that directive.

Changing student characteristics and a changing higher education environment prompt a fresh look at distance learning. The flexibility offered to students, the opportunity to leverage state investments in faculty and learning resources, demonstrated educational validity, and the need to efficiently and affordably provide a broad range of educational opportunities throughout the state to a rapidly growing higher education population are strong arguments for the future of distance learning.

We find that when appropriately designed and conscientiously practiced by the provider -- and responsibly pursued by the learner -- distance learning can be at least as effective as traditional classroom instruction for the delivery and acquisition of many types of knowledge. Institutional practice indicates they agree. During 1994-1995, approximately 50,000 students participated in 800 courses offered through instructional telecommunications by 70 of the state's public higher education institutions. These numbers are steadily increasing. (See Appendix IV.)

Continued positive development is dependent upon several key factors:

- Distance learning should be initiated and continued by institutions to the extent justified by specific needs.

- Significant and serious efforts must be made to ensure appropriate access to all services and resource materials necessary to support learning; lacking that commitment, the quality of distance learning is adversely affected and its academic validity and respectability appropriately called into question.

- Faculty and staff must be well-trained, provided sufficient resources, allotted the development time to produce quality curricula and instruction, and assured that their efforts will be fairly compensated and evaluated by their institutions. In general, broader faculty participation in distance learning depends upon the satisfactory resolution of several key issues: faculty support for the intellectual validity and academic respectability of distance learning; adequate training and instructional support; the manner in which distance learning affects the number of faculty positions needed within higher education; and compensation and security concerns.

- The broad communication strategies of distance learning (cable and broadcast television, satellite networks, interactive video and others) are all viable. The particular needs being addressed should strongly influence the choice of medium.

- Statewide coordination of distance learning must balance the need for responsiveness to a rapidly changing education market with the avoidance of unnecessary duplication, misplaced resources, and divisive, excessive competition between state institutions.

- A flexible and responsive "network of networks," envisioned as a functional inter-connection of needs-based networks under dispersed, institutional control is evolving and should be supported. Such a network should encourage innovation, collaboration, and accessibility while eliminating unnecessary duplication.

- All prudent steps must be taken to ensure that equipment purchases address actual needs, meet performance requirements, and enable connection to and use of the evolving state and national infrastructure.

Numerous recommendations are made, including the following:
(Recommendations relating to content areas are found at the conclusion of respective sections of the document; all of those recommendations are consolidated on page 42 and following)

- TexShare (the innovative program which makes resources of many of the state's university libraries accessible through remote computer networks) should be funded at a level sufficient to expand access to include community colleges, independent degree-granting institutions, public libraries, and health-related institutions. Enhanced articulation with library resource sharing programs of the Texas Education Agency (Texas Library Connection) and the State Library and Archives Commission (Texas State Electronic Library), should be pursued.

- Institutions, through their respective governance structures, should address with their faculties the effect of distance learning on issues of compensation, course development release time, intellectual property rights, and promotion and tenure.

- The Board should continue to refine and evaluate the effectiveness and efficiency of the distance learning approval process.

- The Board should continue to support collaborative efforts between institutions and other appropriate partners.

- The Board should improve institutional access to distance learning information and support.

- The Board should promote the establishment of an Interagency Advisory Committee on Inter-Institutional Technical Standards to monitor advancing practice and provide assistance and advice to institutions.

- The Legislature should find a means to restore the originally envisioned level of funding to the Telecommunications Infrastructure Fund and a variety of opportunities for higher education to access those funds should be provided.

- To increase access in rural/remote areas and by historically underserved populations, the Legislature should provide incentive funding in addition to formula-generated amounts to any public higher education institution serving those areas and populations via distance learning.

Introduction

Directive

House Bill 85 of the 74th Texas Legislature directed the Coordinating Board to formulate a Distance Learning Master Plan " . . . for the development of distance learning and other applications of instructional electronic technology by institutions of higher education." (See Appendix I.) The bill's author was Representative Todd A. Hunter. Co-authors were Representatives Charles A. Finnell and Ted Kamel; Senator Teel Bivins was the sponsor of the bill in the Senate.

The plan is to address:

- coordination and integration of distance learning among higher education institutions and other entities;
- development and acquisition of infrastructure and equipment;
- the establishment of uniform or compatible standards and technologies for distance learning;
- training of faculty and staff appropriate applications and needs assessment;
- funding policies; regulatory policies;
- statutory or regulatory changes desirable to promote distance learning;
- any related issues or recommendations the Board considered appropriate.

For the purposes of this document, "distance learning" is to be understood as learning gained through instruction delivered other than face-to-face on a student's home campus. It may be delivered through electronic means such as television, interactive videoconferencing, or computer networks, or by faculty travel to distant sites; the principal focus in this document is upon electronic delivery.)

The Board had, in fact, already committed itself to the development of such a plan. In January 1995, in response to SCR 66 of the 73rd Legislature, it forwarded to the 74th Legislature a progress report on "Instructional Telecommunications in Texas Higher Education." The development of a statewide plan was one of five policy initiatives and recommendations endorsed by the Board in that report.

Advisory Committee and Development Procedure

As directed by HB 85, the Commissioner of Higher Education appointed an advisory committee to assist in the development of the plan. Twenty-four individuals were asked to serve, representing the various segments of higher education (community colleges, public and independent universities, health science centers), libraries, rural health care, and public education (see Appendix II). The Commissioner delivered a written charge delineating responsibilities and expectations to the committee at its first meeting (see Appendix III). The committee elected Drs. Marion Zetzman and William T. McCaughan as co-chairs and proceeded to address its assigned task.

This document is the product of Board staff. It draws heavily upon the advise, comments and suggestions of the advisory committee and other individuals, and benefited greatly from the development process the committee followed.

One of the principal thoughts guiding the development of this plan was the initial precept of the physician's Hippocratic oath: "first, do no harm." Much good has been accomplished by Texas higher education through distance learning, despite -- or as some have suggested, because of -- the absence of a statewide plan. Institutions have worked to identify needs and have met them through initiative, creativity, diligence, and commitment. Nevertheless, the benefits to be derived from coordinated efforts are compelling; this document is an initial step toward realizing those benefits to the greatest possible extent.

Because of rapid societal and technological changes, and the need to coordinate higher education's efforts with evolving planning currently under way at the Texas Education Agency, the Telecommunications Infrastructure Fund, and others, this document does not provide the specificity and air of certainty characteristic of many planning documents. It does set the stage for an exciting, challenging period of change; provide the context and perspective necessary to guide further policy

development; provide the flexibility necessary to adapt to rapid growth; and represent the level of guidance and recommendation most appropriate for this first step in a continuing process. Through its development, completion, and future evolution, the resulting plan responds to the interests and directives of the Legislature, enlightens evolving Coordinating Board policy regarding distance learning, and provides useful guidance to institutions and other educational and social service partners in the state.

The Changing Nature of Higher Education: Students, Educational Needs, Constrained Resources, and a Rationale for Distance Learning

An informed assessment of the need for distance learning opportunities in Texas must be based upon an understanding of the changing student population and the educational needs those students present. Most readers have a concept of a "typical" or "traditional" college student, based upon their own collegiate experiences or perhaps those of their children. In general, those "traditional" students are in their late teens to early twenties, enter higher education directly from high school, attend classes full-time at a residential college or university, and graduate in four years or so with a baccalaureate degree. Actually, few of today's students fit the above description -- a description which was fairly accurate for most of this century.

Each of those above-cited characteristics (and several others) has changed significantly. The age of the average college student has increased (markedly so at many institutions), as people enter, leave, and re-enter higher education as they juggle work responsibilities, financial resources, and changing career paths. Many of today's students have work and family responsibilities which constrain their abilities to devote time and resources to the steady, concentrated pursuit of a degree; the average length of time to obtain a baccalaureate degree has therefore significantly increased. Rising costs have made it difficult for most families to pay for the higher education of their children; many students therefore augment family resources with heavy work responsibilities as they pursue just enough collegiate study to remain eligible for financial assistance programs. An increasing percentage of students are commuters to the state's colleges and universities; fewer live on campus than in the past.

These factors illustrate constraints of both time and place. As Texas has reached out to offer higher education to an increasing proportion of its people, it has developed institutions throughout the state to provide opportunities for those unable to relocate to attend college. Nevertheless, the increasing specificity of training and/or

education necessary for many of today's jobs requires a range of educational programs beyond the state's ability to support at each of its campuses. And, as many students are "time bound," as discussed above, many are "place bound" as well, unable to leave family and work responsibilities in Temple or Del Rio, for example, to pursue full-time graduate study in Austin, College Station, Dallas, or Houston.

The state's higher education system cannot be all things to all people in all locations. Within the context of developing needed resources it can, however, help expand access to needed courses and programs by using technology to leverage investments already made in faculty, facilities, and learning resources. It has been doing so, with considerable success. While investments in the physical facilities for higher education and increased funding for faculty and instructional support are still necessary (especially in light of a projected additional 192,000 students in the state's public higher education system by 2010), experience thus far has shown that a portion of the state's higher education investment can be prudently spent to develop, for example, electronic access to established programs, rather than funding the creation of new programs which may address a genuine need but have a limited market in a particular area. Other promising applications of distance learning will be discussed.

Distance Learning in Texas Public Higher Education: Current Status and Near Term

Distance learning is a rapidly developing segment of higher education in Texas and the nation at large. We find that when appropriately designed and conscientiously practiced by the provider -- and responsibly pursued by the learner -- distance learning can be at least as effective as traditional classroom instruction for the delivery and acquisition of many types of knowledge.

The flexibility offered to students, the opportunity to leverage state investments in faculty and learning resources, demonstrated educational validity, and the need to efficiently and affordably provide a broad range of educational opportunities throughout the state to a rapidly growing higher education population are strong arguments for the future of distance learning. As will become clear, much good work has already been done by Texas institutions. (During 1994-1995, approximately 50,000 students participated in just over 800 courses offered through instructional telecommunications by 70 of the state's public higher education institutions. These numbers are steadily increasing. See Appendix IV.)

The proliferation of distance learning delivery systems has created the capability for many institutions to reach far beyond their traditional service areas with relative ease -- one of several momentous changes enabled by technology. The increasing capability to reach learners in their homes or offices via television and the Internet makes the concept of geographical boundaries (in which prior development of educational opportunities has been rooted) somewhat arbitrary, at least from a technological point of view. That complicates relationships between institutions within the state, and also results in Texas institutions facing competition from out-of-state institutions whose programs are readily available through technology to students living in Texas.

Developing intra-state institutional collaborations and inter-state relationships (such as those fostered by the member states of the Western Cooperative for Educational Telecommunications and, potentially, the "Western Governors' University" being developed by the Western Governors' Association) offer means through which some of these potential conflicts might be resolved. In such a context, it is likely that exemplary and focused courses and/or degree programs of Texas institutions will find markets for delivery outside the state, carrying the potential for additional institutional revenue at little incremental cost.

With the development of these expanded capabilities, learners will have more choices -- and therefore exercise greater influence in the educational market than at any time in the past. Colleges and universities must therefore seriously re-examine not only the nature of the educational programs they offer, but the methods by which they offer them. The weakening of boundaries -- both real and artificial -- between institutions will offer opportunities for forward-looking institutions to offer the best distance learning initiatives of which they are capable, whether as an originator of programming for distant delivery or as a receptor-facilitator institutional partner for programming originating elsewhere.

Highly competitive environments -- such as the distance learning market is likely to become -- may over time improve overall quality through the elimination of non-competitive participants. There is little doubt that colleges and universities will experience mounting pressure from this new educational market to improve programs and curricula, whether offered on campus or at a distance. Institutions will continue to consider and determine the degree to which they regard distance learning as an appropriate means to carry out their individual and respective institutional missions, and

it is certainly not clear that all institutions should or will participate as originators of distance learning programming. Whether they do or not, however, the institutional choices made in the face of this broader market are likely to have dramatic impact on the institutions themselves.

Finally, the integration of educational technology into the learning process -- whether at a distance or in the campus classroom -- can significantly change the relationships which have traditionally existed between teacher, learner, and learning resources. Technology supporters eagerly champion the opportunities this affords; traditionalists are more cautious. Faculty enthusiasm and anxiety abound. Both serve important purposes as the state addresses the educational challenges which lie ahead.

Distance Learning in Texas Public Higher Education -- Long Term

The Coordinating Board intends to continue to promote increased use of educational technology, instructional telecommunications, and information networks. The development of those technologies should be pursued to enable easy, straightforward, remote access to a wide range of information resources and learning opportunities by learners throughout the state -- regardless of their location or the type of institution they attend. Significant steps have been taken in this direction; much more remains to be done.

Enhanced, pervasive access to information resources is crucial to the academically sound development and expansion of distance learning. And the information needs are quite diverse: high school students taking college courses through interactive video connection between their high school and a distant college; mid-career professionals desiring Internet accessible courses for the enhancement of skills; and practicing teachers pursuing graduate education at locations far removed from the resources of the offering institution all present significant challenges.

Despite these challenges, distance learning offers considerable benefits and holds even greater promise for learners in Texas. Distance learning activity has been increasing significantly each of the last several years. The Board fully expects that trend to continue for the foreseeable future and views distance learning as an important means to meet some of the educational needs of the state. Perhaps the greatest advantage distance learning affords is expanded access to learning -- whether that be on higher education or public school campuses, in the workplace, or in homes. While

the majority of learners will continue to find traditional instruction the educational means of choice, an increasing number of students will obtain at least some of their education through distance learning. It is imperative, therefore, that distance learning must not compromise educational quality in order to increase access. Choices and evaluations in this area will be guided by the Board's long-standing conviction that access without quality is mediocrity, and that quality without access is unacceptable.

In making those necessary choices, the Board will maintain a statewide perspective. For example, the Board will encourage expansion of distance learning, but continue a concurrence process in areas of the state where encroachment is an issue. Further, the Board will seek to protect the ability of smaller institutions to continue to serve their areas.

The balance of this document will develop a concept of distance learning for the higher education system of Texas which is characterized by:

- an attempt to meet the diverse needs of a diverse people;
- core values of access, equity, quality, and fiscal responsibility;
- an emphasis upon the development, leveraging and sharing of educational and technological resources in ways which would benefit the state as a whole;
- responsiveness to the needs of our partners -- public schools, libraries, health organizations, independent degree-granting institutions, and private business;
- an attempt to envision and articulate a means to benefit students and the people of Texas through the use of technology in the educational process;
- continued assimilation of distance learning and educational technology into the curriculum.

Program Development and Coordination

The Regulatory Dilemma

Coordination, concurrence among institutions, and the search for a successor to a geography-based regulatory system are thorny issues affecting relationships between colleges and universities across Texas.

The rapid development of distance-insensitive educational delivery calls for reassessment of the system of geographic service areas through which the state coordinates, mediates, and regulates distance learning. Pressures on that system will significantly increase with the development of Internet and World Wide Web-based distance learning -- perhaps the fastest-growing segment of distance learning nationwide. The state's current structure of higher education regional councils that meet once a year to deliberate off-campus offerings will have difficulty serving a system as agile and responsive as distance learning networks should become to promptly serve developing needs. A regulatory system based completely on geography and protectionism will likely stifle the development and expansion of at least some forms of distance learning and prevent the realization of its potential.

As mass merchandising and rapid transport have thrust the manufacturing sector into a global marketplace, telecommunications technology is transforming segments of higher education into a similar competitive environment. As we approach the 21st century, manufacturers can no longer rely on their geographical location to protect them from distant competition in their "home" markets; locally produced products must be cost- and quality-competitive with those from other regions and other countries. Higher education is now facing a similar challenge. State boundaries -- and probably national boundaries as well -- will be increasingly less significant as new, advanced telelearning networks are developed. If Texas limits through over-regulation its own production and response capability, its educational "customers" will increasingly look outside the state to providers whose flexibility and prompt response to market needs are not limited by geography-bound regulations.

But a totally "free market" approach for distance learning poses numerous problems. Lacking some degree of coordination or mediation, institutions seeking to maximize their distance learning programs will be drawn to what they believe are the most desirable markets; those markets are likely to be equally attractive to their sister institutions. As long as higher education is funded through the generation of semester credit hours and consequent reimbursement -- a largely successful system -- there are institutional incentives to increase enrollment. Unless some care is taken, the promise of distance learning to improve educational opportunities in outlying areas can be diverted toward markets already well-served by traditional means.

While some degree of competition may encourage program improvement, an excess surely leads to waste of the state's educational resources. One of the principal functions of the Coordinating Board is to prevent needless duplication and consequent waste in the higher education system. Lacking some moderating or coordinating influence, that duplication can occur in distance learning programs just as readily as in campus-based offerings and lead to concentration of resources in a few areas to the consequent neglect of others. And the potential divisiveness of unbridled competition could threaten the encouraging growth of inter-institutional collaboration now evident in distance learning practice.

Additionally, many institutions look to the Coordinating Board to provide some assurance that their ability to gain funding through serving local students will not be imperiled by others competing in their area through distance learning. While protecting the status-quo is not sufficient reason to resist a freer market, prudent stewardship of the state's prior and continuing investments in its higher education institutions calls for care.

Statewide Academic Coordination

Clearly, from a statewide perspective, one of the principal challenges of distance learning lies in finding a reasonable balance between the points addressed above. The current system for the statewide coordination of freshman and sophomore level distance learning uses Higher Education Regional Councils, comprised of the presidents of public and independent degree-granting institutions within each of ten established regions. While the process is sometimes criticized for being slow and cumbersome, in general it has proved workable. Recent Coordinating Board policy revisions have granted Regional Councils greater authority and latitude to coordinate

regional offerings and resolve disputes between institutions. Some confusion accompanied the first series of meetings held under these new regulations, and it is yet too early to determine their effect. While additional refinement may be required to enable the Councils to function in the most appropriate manner, in general it seems clear that some such mechanism is required to facilitate the exchange of information between institutions and arbitrate disputes. The Board and its staff will continue to evaluate the effectiveness of the Regional Councils, and will work with the chairs of those Councils to identify needed changes.

Junior, senior, and graduate distance learning courses are coordinated through a somewhat different process, which nevertheless allows all institutions the opportunity to know what courses other institutions are proposing to offer in the coming year which could potentially affect them. The general criticism of the process is that it is cumbersome, time-consuming, and prevents rapid institutional response to needs or opportunities. Although those criticisms are somewhat valid, a better overall system has not yet been devised. Institutions desire freedom and flexibility for their own distance learning offerings, but want to retain the ability to protest another institution's incursions into what they perceive as their area. Are the benefits of a totally free market sufficient to justify the potential reduction of institutional citizenship and cooperative efforts toward common statewide educational needs? Working with the institutions, the Board will continue to evaluate the approval process for upper-division and graduate distance learning and will make appropriate positive changes as they are identified.

Despite criticism of the approval process, the state's institutions offer numerous courses and degree programs through distance learning throughout the state. Institutions are cooperating among and across systems to deliver degree programs which are not widely available. (A few examples -- Texas Tech University Health Sciences Center delivers a master's level Family Nurse Practitioner program to The University of Texas at Tyler; The University of Texas Health Science Center at San Antonio delivers a master's level program in acute nursing care of the adult to Texas A&M International University; The University of Houston-Clear Lake delivers a master's program in software engineering to employees of IBM-Austin who receive their instruction at the J.J. Pickle Research Campus of The University of Texas at Austin. The Coordinating Board has in the last few years approved almost 40 degree programs for delivery to various sites through instructional telecommunications.) To make more timely the consideration of institutional requests, the Board recently revised its procedures for the evaluation and approval of some types of courses and degree

programs. Additional revisions will be made as warranted.

As distance learning degree programs increase, additional policy options may be advantageous. For example, the determination of which institution will provide a program in a particular area might be opened to a Request for Proposal (RFP) process. Upon determination of a localized need, institutions from throughout the state could propose to meet that need through distance learning. In consultation with local interests or institutions, the Coordinating Board could help determine which remote institution could best meet those needs in an effective and efficient manner. Such a process could result in more alternatives -- for the state and the particular area -- from which the most promising could be chosen.

Regional, Statewide, and Multi-State Collaboration

Institutional providers of distance learning are collaborating around regional, state, and multi-state interests; they are also forming alliances as practitioners of a common discipline or responders to a common need. Several institutions in the state collaborate to offer undergraduate physics courses through instructional telecommunications to those institutions lacking a full physics degree program. Several collaborate to offer graduate engineering courses to industry employees in the Dallas-Fort Worth metroplex. Community colleges along the Gulf coast share courses. Northeast Texas institutions worked together to determine the best uses for additional technology funding in their area. Additional collaborations should be encouraged among institutions and other partners.

The Board views regional collaborations as the most promising means to address the issues of needs assessment, connectivity, concurrence for educational programming, and enhanced partnerships between higher education institutions (both public and independent), public schools, libraries, and health-related institutions. It is ironic that opportunities to develop a greater sense of community and shared purpose can be found through the need to coordinate efforts toward connecting with the "outside" world. Such opportunities should not be missed.

Collaborations are crossing state boundaries, as well. The Western Interstate Commission for Higher Education (WICHE) has for many years fostered program

sharing across the borders of its 15 state membership. That activity now includes the sharing of programs through instructional telecommunications, facilitated by organizations such as the Western Cooperative for Educational Telecommunications (WCET) and understandings such as the "Principles of Good Practice for Electronically Offered Academic Degree and Certificate Programs" they have developed. The "Western Governors' University" project of the Western Governors' Association seeks to augment and expand those activities by championing access through technology, emphasizing alternative assessment of learning, and certifying the acquisition of knowledge gained through non-traditional means. While it is too early to assess the benefits of these proposed activities to the state of Texas, the Board staff will monitor developments. To better do that, the Board has become an associate member of WCET. In addition, the staff will study the options for increased statewide access to educational opportunities through distance learning -- particularly as they affect adult learners and non-traditional students -- and develop with the state's institutions the optimum means to meet distance learning needs.

The Need for Information

Throughout the process of developing this document, many individuals and institutions indicated the need for better access to information about distance learning: courses and degree programs offered, approval procedures, technology, course development, collaborative arrangements, and other matters. It was also clear that many practitioners felt the need for centralizing that information. Various responses to those needs were considered, such as the creation of a voluntary statewide organization or significantly enhanced staffing at the Coordinating Board. While much information is available from the Coordinating Board, and experienced practitioners and organizations around the state provide generous assistance for institutions beginning distance learning, rapid growth and the increased need for help stresses available resources. The Board staff will develop an enhanced capacity to provide helpful information about distance learning, including procedures, approvals, technology, regional collaborations, and other matters.

Recommendations (Program Development)

1. The Board should appoint a task force to: 1) evaluate the effectiveness of the Regional Councils in coordinating lower-division distance learning and identify

needed changes; 2) evaluate the process used to coordinate upper-division and graduate distance learning and identify needed changes. The Board should implement those changes which promise greater efficiency.

2. The Board should continue to work with institutions to develop and strengthen regional collaborations involving higher education (both public and independent), public schools, libraries, and health-related institutions to facilitate and coordinate needs assessment, infrastructure development, resource sharing, program development, and faculty and staff development.

3. To increase access to courses and programs in rural and remote areas, and by historically underserved populations, the Legislature should provide incentive funding in addition to formula-generated amounts to any public institution serving those areas and historically underserved populations via distance learning.

4. The Board should see that helpful information about distance learning -- including procedures, approvals, technology, regional collaborations, and other matters -- is provided institutions. As part of that information, the Board should make readily available through electronic means a list of degree programs approved for distant delivery, including any applicable limitations or stipulations.

5. Neither the Legislature nor the Board should prescribe particular distance learning roles for the state's higher education institutions. Distance learning should be needs based and provided by institutions in accordance with their respective roles and missions. In a state as large as Texas, those needs are best determined at the local or regional level and met through whatever level of resources and/or collaboration is required.

6. Institutions should give active consideration to the benefits the state might derive through increased access to their courses, degree programs, or other educational offerings and resources through telecommunications and distance learning.

7. Institutions should continue to work with one another to provide access at smaller institutions to resources (courses, programs, information and training resources) found on the larger campuses.

8. The Board should evaluate the benefits of Texas' participation in multi-state collaboratives for distance learning and enable whatever level of participation

found appropriate.

9. The Board and the Texas Education Agency should evaluate the procedures affecting concurrent enrollment by high school students in higher education courses and make whatever changes are appropriate.

Technology

The infusion of technology into our daily lives, and our acceptance and pursuit of that process, are dominant characteristics of modern culture. The rapidity of technological development has become not only acknowledged but expected, and position at the front of that moving wave is encouraged through social pressure, seductive advertising, and calls to our national interest. Technology as salvation is a cry heard in relation to education, health, economic development, and national security. The benefits we enjoy are indeed marvelous, fascinating, and broadly beneficial, enriching our lives in countless ways.

Technological advances have proven to be powerful agents for change in our society, often in ways unforseen at the time of introduction. While national discussion on the implications of advancing technology continues to draw views from all quarters, enthusiasts and detractors alike agree that modern and evolving technologies engender changes which are more than incremental enhancements or modifications of past practice. We are able to do old things better, but we are also able to do new things.

Educational technology should be viewed within this context. In particular, the technologies that enable distance learning can provide more than the capability to take what has always been done in one classroom and now provide it in two or more locations simultaneously. However beneficial and cost-effective that replication may be, the ability to connect distant peoples, assemble and readily use diverse learning resources, and provide enhanced access to educational opportunities is more powerful and far-reaching.

Connection and Communication

The degree to which the benefits of educational technology -- and particularly distance learning technology -- become available depends to a large degree upon the ability to connect diverse hardware, software, and networks at various locations in useful ways. Significant investments in the technologies that support distance learning have been made by Texas higher education institutions, public schools, health care

providers, and state service agencies. Satellite networks, videoconferencing systems, computer networks, and the people who support them represent some of those investments.

The basic concept around which continued development should center is that of a flexible and responsive "network of networks," envisioned as a functional inter-connection of needs-based networks under dispersed, institutional control. Such a network should encourage innovation, collaboration, and accessibility while eliminating unnecessary duplication. The successful development of such a network depends on the accommodation of existing infrastructure and the integration of future investments into a viable, statewide distance learning infrastructure responsive to defined needs. Industry-wide technical standards for interconnectivity and compatibility across telecommunications infrastructure continue to evolve, but, in general, have been established for many of the current technologies used for distance learning (i.e., International Telecommunications Union H.320 standards for digitally compressed video, audio, and data -- common means of telecommunications). Wherever possible, the ability to function within those existing technical standards should be a key criterion in the selection of distance learning equipment; compliance with H.320 standards, for example, should be expected for all appropriate equipment. Industry standards must be constantly monitored as they are revised to reflect the preferences and choices of the market and end users.

In practice, users may configure their equipment -- or purchase particular equipment -- to take advantage of a specific vendor's proprietary communications enhancements. Nevertheless, the ability to communicate with diverse systems -- albeit at some lowered level of sophistication -- should be fundamental for all general use distance learning technologies in the state. In general, that functional connectivity exists today among the state's institutions. While communication between equipment from various vendors, or equipment using different propagation media or signal formats (i.e., satellite, microwave, telephone lines, analog vs. digital, etc.) is not as easy as users would like, it is possible, given sufficient technical expertise of the operators. Unfortunately, that expertise is not widely available. The ease of connection to the particular networks and systems an institution plans to work with should therefore receive careful attention prior to the acquisition of equipment, and institutions are encouraged to demand practical demonstration of the required capabilities and connectivity prior to purchase.

Plans for the inter-connectivity of systems should: a) recognize and accommodate the delivery systems currently in operation in Texas that are effectively delivering materials to a variety of locations; b) assume continued use of those systems to take advantage of investments already made; and c) provide, wherever appropriate and technically feasible, for incorporation of the continuing connectivity of installed systems into the statewide distance learning systems "mix." In brief, designs for connectivity among distance learning systems must be forward-looking and incorporate the flexibility to maximally accommodate evolving and future technology. Software-based upgradability, for example, appears to be a beneficial and cost-effective strategy for the enhancement of videoconferencing systems.

It is important to note that there is a full menu of technology to support distance learning. The "glamour" technology of the present is two-way, interactive videoconferencing -- a marvelous tool with many appropriate and exciting applications. It is also expensive to acquire and operate, with much higher per-person-served costs than satellite or cable television delivery. Institutions are encouraged to assess carefully the actual needs of the learners they serve, the conditions under which those needs may best be served, and the range of technology available to meet them. "Front-of- the-curve" technology is almost always expensive; limited state resources require responsible choices directly related to defined needs. Cable, broadcast, satellite, video-tape, and computer modems have been and will continue to be viable means by which to deliver instruction.

Infrastructure

The ability to electronically communicate at a distance depends on the "wires and boxes" of telecommunications infrastructure. Texas is remarkably diverse, and its higher education institutions, public schools, libraries, and health centers markedly differ in the degree to which they are internally "wired" and externally "connected." Similarly, the various cities and towns of Texas exhibit wide differences. The Telecommunications Infrastructure Fund (TIF) created by House Bill 2128 of the 74th Texas Legislature holds the promise of significantly improving the capabilities of smaller, rural, or less developed entities to embrace educational technology and establish electronic connection to distant resources. Many of the state's higher education institutions, lacking the resources to provide their students access to the equipment, capabilities, and experiences increasingly necessary for success in the

world of work, need such assistance. The Legislature should find a means to restore the full level of funding envisioned for the TIF, and thereby or through other means provide assistance to meet higher education's needs for the infrastructure, equipment, curriculum development, and training of faculty and staff necessary for the further development and expansion of instructional telecommunications. Other specific recommendations are listed below.

Access to Expertise in Distance Learning Technologies and Applications

There are many experienced practitioners of distance learning in Texas, and many individuals and entities to provide valuable information to those in the initial stages of development. The planning procedures required by the Coordinating Board and interaction with members of the Board's Advisory Committee on Instructional Telecommunications during the approval process provide assistance in matters of administration, management, student support, and resource allocation. No formal body exists, however, for the dissemination of technical assistance to those who need it most. Regional consortia and informal meetings between advanced network system administrators are useful, but it is clear that additional assistance would be helpful. Working with institutions, other agencies, and professional organizations within the state, the Coordinating Board will work to make reliable information more readily available to institutions seeking to develop distance learning technologies. The Board should promote the establishment an Interagency Advisory Committee on Inter-Institutional Technical Standards to monitor advancing practice and provide assistance and advice to institutions.

Recommendations (Technology)

1. Institutions should purchase equipment and develop networks with the ability to function within and at the reasonable upper range of evolving and elevating technical standards. The ability to communicate with diverse systems should be fundamental for all general use distance learning technologies in the state. Institutions should demand practical demonstration of the required capabilities and connectivity prior to purchase.

2. The Board should promote the establishment of an Interagency Advisory Committee on Inter-Institutional Technical Standards to monitor advancing practice and provide information and assistance to institutions and other partners. That committee should include representation by the Coordinating Board, the Texas Education Agency, the General Services Commission, the Department of Information Resources, and the State Library and Archives Commission.

3. To attain the desired "network of networks," the TIF should provide funding for cost-effective interconnectivity of evolving regional telecommunications networks.

4. To promote access to educational resources, state funds -- whether disbursed through the Telecommunications Infrastructure Fund or other means -- should be provided to fund only those telecommunications technologies and projects which can take advantage of the benefits of wide connectivity to the evolving "network of networks."

5. Institutions should consider leasing (or other acquisition strategies) rather than purchasing equipment which is likely to be quickly out-moded.

6. Institutions should consider the broad range of technology available to support distance learning and should deliver instruction using means appropriate to identified needs and supportable on an economic basis.

Funding and Financial Issues

Broad generalizations about the costs and perceived financial benefits of distance learning are troublesome. Since equipment, staff, and learning resources used for distance learning often support on-campus operations as well, direct cost allocations to distance learning are difficult. And the identification of hoped-for financial savings is clouded by difficult questions: 1) To what standard are cost comparisons being made? Traditional classroom instruction? Building additional facilities and hiring more faculty? and 2) What are the financial benefits of expanded access -- or the costs to society of missed opportunities?

Costs of Distance Learning

Distance learning costs include:

- Network design, configuration, and installation
- Hardware and software acquisition
- Facilities -- acquisition, modification, maintenance
- Faculty, staff, and technical support personnel
- Program development, administration, management
- Academic support services -- counseling, library resources, etc.
- Initial and on-going training of faculty, staff, students, administration
- Instructional design and program development
- Technical integration/conversion of diverse delivery modes
- Marketing, recruiting, admissions
- Program research, assessment, evaluation, quality control
- Maintenance and upgrade of systems -- both software and hardware
- Transmission charges (satellite time, phone lines)
- Additional student support costs
- Faculty and staff travel to remote sites
- Course acquisition and licensing fees

These costs vary considerably, depending upon mode of delivery (cable television, interactive video, computer modem, and others), required resources, and the

technical complexity of the activity. The costs for a community college to acquire and deliver a packaged course over a local cable television network are considerably lower than the costs to deliver a graduate nursing course through interactive video. Not only are the actual costs quite different, but the components differ as well. Institutions are cautioned to give careful consideration to each of the possible costs listed above. Established Coordinating Board procedures require institutions seeking significant expansion of their distance learning activities to report projected costs and anticipated revenues -- a useful process which prompts careful institutional analysis and encourages thorough planning.

Financial Support for Distance Learning

Funds to support distance learning come from the following sources:

- The state's formula funding system
- Tuition and fees
- Revenues from continuing education, contract training, videoconferencing
- Grants, gifts, in-kind donations
- Special Legislative appropriations

On-campus courses are funded by the state through a sophisticated formula system based on assessment of the various costs of delivering and supporting instruction. Distance learning courses are funded at the same amount each course would generate were it offered on-campus. While distant students do not cause an institution to incur some of the costs of supporting on-campus students (building maintenance, for example), they do require the costs cited above. At the present time, the practice of funding distance learning at the same rate as on-campus delivery appears to be working. As distance learning increases as a percentage of total instruction offered, however, the Coordinating Board's Formula Advisory Committee may find it useful to consider whether modification is warranted.

Formula funding for distance learning currently flows to the institution which awards the academic credit for the course taught. Arrangements to reimburse distant sites or other institutions for expenses they incur while serving as distant facilitators or collaborators are currently at the discretion of the various parties. The Board staff is not aware of any instance in which collaborating institutions have been unable to reach satisfactory agreements. Host institutions' roles to support distance learning vary

widely, from almost-equal partnership with the originating institution to merely the provision of a classroom. The wide variance of such relationships makes a uniform splitting of funding inappropriate.

Apples and Oranges: Comparing Costs

Reasonable conclusions about the cost effectiveness of distance learning must of necessity be piecemeal. Does it cost less to teach 100 students through pre-produced, televised instruction than through four traditional classes of 25 students? Definitely yes. Is that more cost effective than placing them in a large lecture hall with one teacher? Probably not. Does it cost less to use interactive video to deliver a relatively rare degree program (a Master of Library Science degree, for example) to an area of the state in which the program is not offered, or to hire additional faculty and develop another MLS program in that area? Interactive delivery is definitely more cost effective.

In general, when carefully designed, responsibly managed, and appropriately targeted to meet defined needs, distance learning is a cost-effective manner of delivering many types of instruction. It can provide smaller institutions a means of offering courses they could not otherwise afford to provide, perhaps to smaller groups of students than they could otherwise justify serving. It can allow urban institutions to provide instruction at hours otherwise unused. And it can leverage investments the state has already made in faculty, facilities, and learning resources.

While start-up costs are often substantial, longer-term financial evaluations appear promising. Economies of scale and the ability to expand service at modest incremental cost offer rewards which justify prudent investments. As has been so often stated in this document, identification and assessment of actual student and market needs are of paramount importance. It is only through serving those needs that the financial resources required to sustain distance learning activities will be generated.

Recommendations (Funding)

1. Access to TIF funds -- or others if needed and available -- should be provided to enable higher education to acquire and develop needed resources for educational technology, telecommunications, and distance learning.

2. In view of Sec. 35 of the current appropriations rider to House Bill 1 of the 74th Legislature (which directs all public institutions and agencies of higher education to seek telecommunications and related funding from the Telecommunications Infrastructure Fund), the Legislature should find a means to restore the originally envisioned level of funding to the TIF.

3. Since the appropriations rider mentioned above provides a disincentive to institutions, the Legislature should delete the rider.

4. In order to promote creativity and provide for a variety of funding opportunities accessible by institutions of different sizes and missions, the TIF board should consider disbursement of funding through competitive grants and loans, direct allotments by the board, and a formula system which would provide some level of funding for all institutions.

5. Collaborative efforts between institutions and other partners (schools, libraries, health institutions, independent colleges and universities) should receive preferential consideration and funding from the TIF board.

6. Institutions should carefully consider all costs associated with distance learning in planning for the scope, locations, and on-going support of their efforts. Working with its Advisory Committee should develop checklists and procedures to assist institutions in their identification of distance learning costs to ensure financial viability.

7. To increase access to courses and programs in rural and remote areas, and by historically underserved populations, the Legislature should provide incentive funding in addition to formula-generated amounts to any public higher education institution serving those areas and populations via distance learning.

Faculty and Support Staff

The continued positive development of distance learning in Texas depends upon the availability and enthusiastic support of well-trained faculty and staff who are provided sufficient resources, allotted the development time to produce quality curricula and instruction, and assured that their efforts will be fairly compensated and evaluated by their institutions. The degree to which each of these stipulations is reflected in current practice varies widely from institution to institution.

Faculty and Staff Training and Development

To teach effectively at a distance, faculty have been required to develop new skills. Among them are skills in the use of videoconferencing equipment, multimedia presentations and learning modules, curricular development for new media, strategies for communicating with distant students, television production and presentation, sophisticated computer applications, and the provision of learning resources to remote students through electronic means. For some faculty, those skills have been developed within the context of a well-structured and supported faculty development process; others have been less fortunate.

Current practitioners tend to be largely self-selected and self-taught. While offering the intangible but definite benefit of faculty enthusiasm, this general practice has restricted the ranks of distance learning faculty to those willing to be pioneers -- with attendant risks and uncertain rewards. Although faculty members are indeed learners as well as teachers, they are also professionals who generally enjoy the security and respect earned through mastery of their discipline. It is difficult to be a good teacher in the traditional classroom; to teach well at a distance is a daunting challenge, especially if one hasn't the opportunity to develop the necessary skills prior to needing them. To this point, relatively few faculty regard the non-institutionalized and generally ill-defined rewards of teaching at a distance worth the difficulties and associated risks.

In general, however, faculty who do teach at a distance are enthusiastic about the process. Many comment upon the enhanced opportunities provided for students,

and upon the positive ways in which teaching at a distance has improved their teaching in the traditional classroom. Many lament the lack of formal training, feel they need greater preparation time, and have concerns about how their work in distance learning affects their careers.

Faculty Release Time, Compensation, Intellectual Property Rights, Promotion and Tenure

In general, broader faculty participation in distance learning depends upon the satisfactory resolution of several key issues: faculty support for the intellectual validity and academic respectability of distance learning; adequate training and instructional support; the manner in which distance learning affects the number of faculty positions needed within higher education; and compensation and security concerns. Institutional policies and procedures dealing with these latter concerns -- including release time for course development, workload calculations, royalties and copyright, compensation for teaching a distance learning course, and the evaluation of distance learning activities for the purposes of promotion and tenure considerations -- vary considerably. Some institutions have well-developed policies and procedures; others have minimal guidelines or no formal policies whatsoever.

These matters are of great concern to faculty -- and of particular significance to those seeking tenure in what is now an extraordinarily competitive higher education environment. Lacking assurance that their efforts in distance learning will be rewarded, many feel it is a risk to divert time and effort from the traditional emphasis upon research and publication. And, in general, faculty who have already "succeeded" in the traditional professional process see few incentives to do other than that which gained them success in the first place. While the pioneering faculty who choose to teach at a distance may be sufficient to meet the need in the near term, in the interests of equity for them and incentive for others these issues demand attention.

The proper venue for that attention is within the academic governance structures of the state's higher education institutions. Policies appropriate for one of the state's community colleges will not be appropriate for the major research universities. Institutions seeking increasing involvement in distance learning are encouraged to involve their faculties and administrations and address these important issues.

Sharing Resources for Faculty and Staff Development

The provision of thorough, comprehensive, and up-to-date training for faculty and staff strains the resources of many of the state's institutions. The institutional collaborations which are developing on a regional, system, discipline, or categorical basis, however, provide opportunities for the sharing of expertise, and can make more affordable the training and support necessary. Much of that is happening throughout the state. In some instances, the technologies through which distance learning is delivered are serving as conduits for practitioner training as well. This can be of particular value to technical support staff, who work with rapidly changing technical considerations and communications requirements. As the state works increasingly toward the ability to connect its citizens, teachers, and learners across diverse technical platforms and media, the need for flexible, well-trained technical personnel will only increase.

Recommendations (Faculty and Support Staff)

1. Institutions should actively promote adoption of technology and enable its effective applications in the teaching/learning process.

2. Higher education institutions should address with their faculties the effect of distance learning and educational technology on issues of compensation, course development release time, intellectual property rights, and promotion and tenure, and should develop clear policies covering these issues.

3. Higher education institutions should seriously and formally pursue faculty and staff development for distance learning and educational technology. Continuing and increased use should be made of collaborative opportunities to share the costs for that development among institutions.

4. Institutions should include costs for such faculty and staff development in their planning and budgeting processes.

5. State funds -- whether disbursed through the Telecommunications Infrastructure Fund or other means -- should be provided to fund only those technology or

distance learning projects which contain provisions for the training and development of faculty and staff.

Support Services for Distant Learners

Obligations

Institutions that offer distance learning have an obligation to provide students at distant sites the essential services which support learning. That obligation derives from four sources: 1) appropriate extension of the responsibilities to students which every quality institution regards as implicit in its student-institution "contract," 2) the criteria which institutions must meet to obtain or maintain accreditation by regional associations (Texas' institutions seek accreditation by the Southern Association of Colleges and Schools), 3) the Rules and Regulations of the Texas Higher Education Coordinating Board (especially Chapter 5, Subchapter H "Approval of Distance Learning for Public Colleges and Universities"), and 4) state and federal laws.

The Southern Association, in its Criteria for Accreditation (1994), states that student support services " . . . are essential to the achievement of the educational goals of the institution and should contribute to the cultural, social, moral, intellectual and physical development of students." (Section 5.4.1) It is clear that the Southern Association expects institutions to meet the full range of support service needs presented by distant learners. In addressing the needs of distant learners for library resources, for example, the Association states that ". . . an institution must ensure the provision of and ready access to adequate library/learning resources and services to support the courses, programs and degrees offered. The institution must own the library/learning resources, provide access to electronic information available through existing technologies, or provide them through formal agreements." (Section 5.1.7)

The Coordinating Board has for more than 20 years upheld high expectations for the provision of support services to distant learners. While technology and advancing institutional practices have broadened opportunities, improved access, and made increasingly diverse the means of delivery, fundamental Coordinating Board policy regarding support for distant learners remains constant: distant learners must not be disadvantaged learners. That policy finds application in the Board's rules regarding distance learning, recently revised with significant institutional consultation (January 1996).

Certain relevant federal and state laws make no differentiation between on-campus learners and distant learners. For example, the Texas Academic Skills Program (TASP -- Texas Education Code 51.306) applies to both, and the attendant directives to institutions and requirements for students must be met irrespective of the location of the student. To cite a second example, as the field of distance learning matures, expands, and reaches out to people for whom access to academic programs is difficult for physical reasons (a population which could, of course, especially benefit from technologically-enhanced access), the issue of compliance with provisions of the federal Americans with Disabilities Act will likely become more prominent.

Institutional Planning for Student Support Services

The challenges of providing support services to distant learners are considerable, and meeting those challenges requires careful and thorough planning by institutions. Although the management and academic responsibility for distance learning rests administratively within the academic structures of institutions, it is clear that the provision of adequate instructional and support services to distant learners requires the cooperation and broad support of institutional segments outside the academic affairs area: admissions, registration, financial aid, counseling, telecommunications management, computing resources, and other areas. Because such support should be made available to distant learners, the persons responsible for those and other relevant services within institutions must be involved in the initial planning for distance learning support, not consulted as an afterthought.

In addition to the planning required by Coordinating Board policies and procedures, institutions are expected to periodically examine and revise, if necessary, their plans and strategies for meeting the needs of distant learners. This is especially important in view of the rapidity of change regarding needs and practices. Distant learners themselves should be formally and actively involved in that process.

Diverse Needs, Diverse Purposes

Planning and practice for distance learning support services must acknowledge the diversity of student needs and the diverse purposes of instruction. Texas

institutions offer continuing education courses, undergraduate and graduate courses for academic credit, and professional development courses to many types of learners. Those learners, for example, may be high school students taking collegiate courses through a university or community college, or they may be nurses taking courses in an advanced practice specialty. Increasingly, distant learners may be anywhere: college campuses, high schools, businesses, hospitals, prisons or homes. They may be within Texas, or they may be outside the state or country. They may receive instruction through television (broadcast or cable), one-way video/two-way audio, interactive video, videotapes, computers and computer networks, and, potentially, other means of delivery yet to be developed. Increasingly, instruction is delivered using a combination of these means -- and perhaps involving traditional face-to-face instruction as well. The matrix of student diversity, services needed, means of course and support service delivery, location, and intended outcome is understandably complex, and requires substantial institutional commitment to develop satisfactory solutions to the various problems presented.

What Student Support Services are Needed?

Student support services which may be necessary or appropriate for distant learners may be grouped in five broad categories: *Administrative Services, Communications Services, Instructional Support, Student Activities,* and *Student Personnel Services.* Institutional planning should specifically address each of these areas -- a process required by established Coordinating Board procedures for the approval of distance learning.

Administrative Services include admissions, financial aid, registration, records management (transcripts, grade reports), graduation, and bookstore services. *Communications Services* include the means of student-faculty contact (phone, fax, video, Internet, etc.), interaction with other students, and technology-based resource access. *Instructional Support* includes academic assessment, TASP-related advising and testing, remediation, access to -- and perhaps training in the use of -- library and other learning resources, tutoring, academic testing and computer services.

Student Activities may include honor societies, journal clubs, discipline interest groups and recreation opportunities. *Student Personnel Services* may include diagnostic testing and assessment, counseling, placement services and health

services.

Support services may be delivered to distant learners through a variety of means, including student visits to the home campus; contracts with other higher education institutions, high schools, or other entities in closer proximity to distant sites; faculty and support staff travel to distant sites; and, increasingly, reliance upon access through technological means.

Current Status, Necessary Choices

While capabilities to provide support services through telecommunications and other technological means are increasing rapidly, it is clear -- at this point at least -- that the delivery of didactic course content through technology is much further advanced than the actual use of technology to provide support services. This occurs for several reasons, some of which will likely be ameliorated over time. For example, while it is hoped that at some time in the future most distant learners will have electronic, full-text access to the broad range of library and other resource materials necessary to support serious study, at this point that is clearly not the case. Distant access to resource materials -- whether through full-text access or catalog/index searching - has greatly improved with the development of TexShare, the innovative program which makes resources of many of the state's university libraries accessible at remote sites through computer networks. Expansion of that system to include access by community colleges, independent degree-granting institutions, public schools and libraries, and health-related institutions should be funded. In addition, enhanced articulation with the library resource sharing programs of the Texas Education Agency (Texas Library Connection) and the State Library and Archives Commission (Texas State Electronic Library) should be pursued.

Significant and serious efforts must be made to ensure appropriate access to all resource materials necessary to support learning; lacking that commitment, the quality of distance learning is adversely affected and its academic validity and respectability appropriately called into question. In the world of practical realities, institutions -- and, in many cases, the Coordinating Board -- must make careful judgments about the degree to which optimum access to such support services will be compromised to gain greater access to educational opportunities for distant learners.

Support Service Fees for Distant Learners

The provision of support services to distant learners is often expensive, demanding the investment of considerable staff time in addition to capital resources. Distance learning courses are funded by the state at the rate each particular course would generate were it offered on-campus. In some cases, that amount is sufficient to cover actual costs; often it is not. Institutions are financially supporting distance learning activities through a variety of means discussed elsewhere in this document. Some institutions are charging additional fees for distant learners; many are not. In general, any supplemental fees charged distant learners should be appropriate to the services provided. For example, distant learners should not be charged for services which are clearly related only to on-campus activities in which they cannot participate due to distance.

Recommendations (Student Support)

1. Institutions should provide support services appropriate to student needs and at a level which supports learning and does not disadvantage distant learners. Access to financial aid counseling and financial support should be available to distant learners without prejudice to their distant status.

2. Institutions should maximize collaborative efforts to provide access to information resources available through telecommunications.

3. The Legislature should provide funding for TexShare at a level sufficient to provide for access by all higher education institutions (including community colleges, independent degree-granting institutions, and health education/science centers), public schools, public libraries, and non-profit health-related institutions or telemedicine providers covered by H.B. 2128 of the 74th Texas Legislature.

4. The Board and the Texas Education Agency (TEA) should ensure articulation between higher education information resources and public schools through TEA's Texas Library Connection and the state's TexShare program. The Board, TEA and the State Library and Archives Commission should ensure articulation between higher education information resources, public schools, and the Texas State Electronic Library.

5. Any supplemental fees charged by institutions for distance learning should be appropriate to the services provided. For example, distant learners should not be charged fees for services which are clearly related only to on-campus activities in which they cannot participate due to distance.

Evaluation and Research

Evaluation

Institutions submitting new distance learning initiatives to the Coordinating Board for approval are required to describe the procedures they have or will put in place to evaluate the appropriateness, effectiveness and efficiency of the proposed instruction. Further, the Board expects institutional self-evaluation of distance learning to be on-going, comprehensive, reflective of the intents and purposes of the instruction offered, and meaningfully effective in eliciting appropriate change. As is expected for all academic programs, institutions, through their respective governance structures, are responsible for the quality of instruction they offer through distance learning. A rigorous internal evaluation process is necessary to meet that responsibility.

In general, studies support the conclusion that well-designed and directed distance learning can lead to student achievement which is at least comparable to on-campus instruction. Though distance learning has struggled for academic respectability within higher education, ironically, this struggle for legitimacy has subjected distance learning to greater scrutiny regarding its effectiveness than has generally been focused upon traditional classroom instruction -- which, in higher education, is seldom subject to evaluation by external norms.

Nevertheless, the added complexities and complications implicit in distance learning argue for an especially thorough approach to evaluation, both at the institutional level and from the statewide perspective of the Coordinating Board. In particular, it is important for the Board to have an on-going sense of how distance learning is addressing the educational needs of students in areas of the state that lack the broad programmatic opportunities available in urban centers. The Board's procedures for the approval of distance learning provide data helpful to this process; periodic targeted surveys have been and will continue to be used to provide supplemental information.

Research

The rapid development of distance learning within the state provides numerous opportunities for institutions and practitioners to engage in research. Particular benefits of such inquiry might include the identification of "best practices" and other models for development and refinement; comparisons of the effectiveness, cost, and efficacy of various delivery systems; and the identification of learner traits or prerequisites indicative of likely success as a distant learner. To minimize difficulties and maximize the benefits of distance learning, broad availability of such research findings is needed. Several organizations exist in the state for the exchange of distance learning information; through those organizations and other appropriate forums the staff of the Coordinating Board will assist in the dissemination of appropriate findings.

Recommendations (Evaluation and Research)

1. Institutions should carefully monitor the progress of students engaged in distance learning to determine the effectiveness of instruction and make any needed changes.

2. The Board should require institutions which have received authority to deliver full degree programs through distance learning to report the progress of students in those programs to the Board every two years.

3. The Board should assist institutions in the collection, interpretation, and dissemination of research findings about the best practices of distance learning.

Consolidated Recommendations

Recommendations to the Texas Legislature

1. Funds should be provided to enable higher education to acquire and develop needed resources for educational technology, telecommunications, and distance learning.

2. In view of Sec. 35 of the current appropriations rider to House Bill 1 of the 74th Legislature (which directs all public institutions and agencies of higher education to seek telecommunications and related funding from the Telecommunications Infrastructure Fund -- see Appendix IV), the Legislature should find a means to restore the originally envisioned level of funding to the TIF.

3. Since the appropriations rider mentioned above provides a disincentive to institutions, the Legislature should delete the rider.

4. To increase access to courses and programs in rural and remote areas, and by historically underserved populations, the Legislature should provide incentive funding in addition to formula-generated amounts to any public higher education institution serving those areas and populations via distance learning.

5. The Legislature should provide funding for TexShare at a level sufficient to provide for access by all higher education institutions (including community colleges, independent degree-granting institutions, and health education/science centers), public schools, public libraries, and non-profit health-related institutions or telemedicine providers covered by H.B. 2128 of the 74th Texas Legislature.

6. Neither the Legislature nor the Board should prescribe particular distance learning roles for the state's higher education institutions. Distance learning should be needs based and provided by institutions in accordance with their respective roles and missions. In a state as large as Texas, those needs are best determined at the local or regional level and met through whatever level of resources and/or collaboration is required.

Recommendations to the Coordinating Board

1. The Board should continue to work with institutions to develop and strengthen regional collaborations involving higher education (both public and independent), public schools, libraries, and health-related institutions to facilitate and coordinate needs assessment, infrastructure development, resource sharing, program development, and faculty and staff development.

2. Neither the Legislature nor the Board should prescribe particular distance learning roles for the state's higher education institutions. Distance learning should be needs based and provided by institutions in accordance with their respective roles and missions. In a state as large as Texas, those needs are best determined at the local or regional level and met through whatever level of resources and/or collaboration is required.

3. The Board should appoint a task force to: 1) evaluate the effectiveness of the Regional Councils in coordinating lower-division distance learning and identify needed changes; 2) evaluate the process used to coordinate upper-division and graduate distance learning and identify needed changes. The Board should implement those changes which promise greater efficiency.

4. The Board should see that helpful information about distance learning -- including procedures, approvals, technology, regional collaborations, and other matters -- is provided institutions. As part of that information, the Board should make readily available through electronic means a list of degree programs approved for distant delivery, including any applicable limitations or stipulations.

5. Working with its Advisory Committee on Instructional Telecommunications, the Board should develop checklists and procedures to assist institutions in their identification of distance learning costs to ensure financial viability.

6. The Board should promote the establishment of an Interagency Advisory Committee on Inter-Institutional Technical Standards to monitor advancing practice and provide information and assistance to institutions and other partners. That committee should include representation by the Coordinating Board, the Texas Education Agency, the General Services Commission, the Department of Information Resources, and the State Library and Archives Commission.

7. The Board and the Texas Education Agency (TEA) should ensure articulation between higher education information resources and public schools through TEA's Texas Library Connection and the state's TexShare program. The Board, TEA and the State Library and Archives Commission should ensure articulation between higher education information resources, public schools, and the Texas State Electronic Library.

8. The Board should evaluate the benefits of Texas' participation in multi-state collaboratives for distance learning and enable whatever level of participation found appropriate.

9. The Board and TEA should evaluate the procedures affecting concurrent enrollment by high school students in higher education courses and make whatever changes are appropriate.

10. The Board should require institutions which have received authority to deliver full degree programs through distance learning to report the progress of students in those programs to the Board every two years.

11. The Board should assist institutions in the collection, interpretation, and dissemination of research findings about the best practices of distance learning.

Recommendations to Institutions

1. Institutions should actively promote adoption of technology and enable its effective applications in the teaching/learning process.

2. Institutions should give active consideration to the benefits the state might derive through increased access to their courses, degree programs, or other educational offerings and resources through telecommunications and distance learning.

3. Institutions should purchase equipment and develop networks with the ability to function within and at the reasonable upper range of evolving and elevating technical standards. The ability to communicate with diverse systems should be fundamental for all general use distance learning technologies in the state. Institutions should demand practical demonstration of the required capabilities and connectivity prior to purchase.

4. Institutions should carefully consider all costs associated with distance learning in planning for the scope, locations, and on-going support of their efforts.

5. Institutions should consider leasing (or other acquisition strategies) rather than purchasing equipment which is likely to be quickly out-moded.

6. Institutions should consider the broad range of technology available to support distance learning and should deliver instruction using means appropriate to identified needs and supportable on an economic basis.

7. Institutions should continue to work with one another to provide access at smaller institutions to resources (courses, programs, information and training resources) found on the larger campuses.

8. Institutions should maximize collaborative efforts to provide access to information resources available through telecommunications.

9. Higher education institutions should address with their faculties the effect of distance learning and educational technology on issues of compensation, course development release time, intellectual property rights, and promotion and tenure, and should develop clear policies covering these issues.

10. Higher education institutions should seriously and formally pursue faculty and staff development for distance learning and educational technology. Continuing and increased use should be made of collaborative opportunities to share the costs for that development among institutions.

11. Institutions should include costs for such faculty and staff development in their planning and budgeting processes.

12. Institutions should provide support services appropriate to student needs and at a level which supports learning and does not disadvantage distant learners. Access to financial aid counseling and financial support should be available to distant learners without prejudice to their distant status.

13. Any supplemental fees charged by institutions for distance learning should be appropriate to the services provided. For example, distant learners should not be charged fees for services which are clearly related only to on-campus activities in

which they cannot participate due to distance.

14. Institutions should carefully monitor the progress of students engaged in distance learning to determine the effectiveness of instruction and make any needed changes.

Recommendations to the Telecommunications Infrastructure Fund (TIF) Board

1. Access to TIF funds -- or others if needed and available -- should be provided to enable higher education to acquire and develop needed resources for educational technology, telecommunications, and distance learning.

2. In order to promote creativity and provide for a variety of funding opportunities accessible by institutions of different sizes and missions, the TIF board should consider disbursement of funding through competitive grants and loans, direct allotments by the board, and a formula system which would provide some level of funding for all institutions.

3. To promote access to educational resources, state funds -- whether disbursed through the Telecommunications Infrastructure Fund or other means -- should be provided to fund only those telecommunications technologies and projects which can take advantage of the benefits of wide connectivity to the evolving "network of networks."

4. State funds -- whether disbursed through the Telecommunications Infrastructure Fund or other means -- should be provided to fund only those technology or distance learning projects which contain provisions for the training and development of faculty and staff.

5. Collaborative efforts between institutions and other partners (schools, libraries, health institutions, independent colleges and universities) should receive preferential consideration and funding from the TIF board.

6. To attain the desired "network of networks," the TIF should provide funding for cost-effective interconnectivity of evolving regional telecommunications networks.

Additional Recommendations

1. The Board and the Texas Education Agency should evaluate the procedures affecting concurrent enrollment by high school students in higher education courses and make whatever changes are appropriate.

2. The Board and the Texas Education Agency (TEA) should ensure articulation between higher education information resources and public schools through TEA's Texas Library Connection and the state's TexShare program. The Board, TEA and the State Library and Archives Commission should ensure articulation between higher education information resources, public schools, and the Texas State Electronic Library.

Appendix I

H.B. No. 85

AN ACT

relating to the development of distance learning and related activities by institutions of higher education.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SECTION 1. Subchapter C, Chapter 61, Education Code, is amended by adding Section 61.0771 to read as follows:

Sec. 61.0771. DISTANCE LEARNING MASTER PLAN. (a) The board, in cooperation with institutions of higher education, shall develop a master plan for the development of distance learning and other applications of instructional electronic technology by institutions of higher education. The plan shall include recommendations for:

(1) the coordination and integration of distance learning and related telecommunications activities among institutions of higher education and other public or private entities to achieve optimum efficiency and effectiveness in providing necessary services, including identification of the costs and any cost savings to be achieved by the use of distance learning and related activities such as teleconferencing or sharing resources by telecommunications;

(2) the development and acquisition of distance learning infrastructure and equipment, including its functions and capabilities, within and among institutions of higher education consistent with the missions of those institutions and the recipients of their services;

(3) the establishment of uniform or compatible standards and technologies for distance learning;

(4) the training of faculty and staff in the use and operation of distance learning facilities;

(5) appropriate applications of distance learning, including the identification of the needs of the student populations to be served;

(6) policies relating to the funding for implementation and administering of distance learning, including interinstitutional funds transfers among institutions providing and receiving distance learning services and formula funding allocations, and recommendations for the appropriate fees for services offered through distance learning;

(7) revising regulatory policy relating to public utilities to facilitate distance learning; and

(8) any statutory or regulatory changes desirable to promote distance learning or to implement the master plan.

(b) The board may include in the plan any related recommendation the board considers appropriate, including recommendations for coordination of distance learning with other telecommunications activities and services conducted by government agencies or private entities.

(c) To assist in the development of the plan, the board shall create an advisory committee consisting of experts in distance learning, including school administrators and faculty and lay persons. The board shall include on the committee a representative of each university system and each public senior college or university under a separate governing board, and representatives of public junior colleges, public health science centers, centers created under

Chapter 106, Health and Safety Code, medical schools, public technical institutes, and independent institutions of higher education. The advisory committee shall include at least three faculty members who teach a distance learning course. The appointment of an employee of an institution of higher education to the committee must be approved by the president or chancellor of that institution.

(d) The advisory committee may request the cooperation or participation of state agencies, public broadcasting stations, representatives of the local and long-distance telecommunications industries, representatives of federally qualified health centers, and representatives providing distance learning equipment or services, including computer hardware and software, in preparing the master plan.

(e) The board shall approve the master plan and present it to the legislature not later than December 31, 1996. The plan shall include a summary of the then-current uses of distance learning and other instructional electronic technologies by institutions of higher education and of the plans of those institutions to implement, improve, or expand the use of distance learning and other instructional electronic technologies. The board may revise the master plan at any subsequent time as the board considers appropriate.

SECTION 2. The importance of this legislation and the crowded condition of the calendars in both houses create an emergency and an imperative public necessity that the constitutional rule requiring bills to be read on three several days in each house be suspended, and this rule is hereby suspended.

_____ _____

President of the Senate Speaker of the House

I certify that H.B. No. 85 was passed by the House on April 4, 1995, by a non-record vote; and that the House concurred in Senate amendments to H.B. No. 85 on May 5, 1995, by a non-record vote.

_____

Chief Clerk of the House

I certify that H.B. No. 85 was passed by the Senate, with amendments, on April 27, 1995, by a viva-voce vote.

_____

Secretary of the Senate

APPROVED: _____

Date

_____

Governor

APPENDIX II

DISTANCE LEARNING MASTER PLAN ADVISORY COMMITTEE

Bill McCaughan, Co-Chair
Vice Provost for Outreach & Information Services
Texas Tech University
Health Sciences Center

Marion Zetzman, Co-Chair
Professor and Chairman, Division of Community
Medicine at Southwestern Medical School
The University of Texas Southwestern
Medical Center at Dallas

John Anderson
Vice President for Academic Affairs
East Texas State University at Texarkana

Roger Boston, Rockwell Chair
College Without Walls
Houston Community College System

Ron Brey
Associate Vice President of Distance Learning
Austin Community College

David Cockrum
Vice President for Academic and Student Affairs
Sul Ross State University

John Dinkel
Associate Provost for Computing
Texas A&M University

Carol Hightower Parker, Dean
College of Continuing Education
Texas Southern University

Anita Givens, Senior Director
Technology Services Division
Texas Education Agency

Edward Hugetz, Director
University of Houston at Fort Bend
University of Houston System

Henry Ingle, Assistant Vice President
Technology Planning & Development
The University of Texas at El Paso

Laura M. Jordan, Executive Director
Center For Rural Health Initiatives

Stanley L. Kroder, Program Director
Telecommunications Management
University of Dallas

Robert S. Martin, Director and Librarian
Texas State Library

William Morris
Assistant Vice President for Academic Affairs
The University of Texas-Pan American

Robert L. Musgrove, Dean of Instruction
Texas State Technical College-Sweetwater

Pam Quinn, Vice President
R. Jan LeCroy Center for Educational
Telecommunications
Dallas County Community College District

Reagan Ramsower, Associate Dean
Hankamer School of Business
Baylor University

Lee Rayburn, Director
Instructional Technology
Stephen F. Austin State University

Melinda Reagan
Vice President of Administrative Services
Amber University

Linda A. Rodriguez, Dean
Southwest Campus
St. Philip's College

Valerie Showalter
Assistant Professor/Program Coordinator
Radiologic Technology
Midwestern State University

David Shrader, Dean
College of Music
University of North Texas

Les Thompson, Associate Vice President of
Research and Dean of the Graduate School
Texas Woman's University

Adrianna Lancaster (student representative)
Texas Woman's University

Patricia Candia (student representative)
St. Philip's College

APPENDIX III

Texas Higher Education Coordinating Board
Distance Learning Master Plan Advisory Committee

Commissioner's Charge to the Committee
September 28, 1995

- Keep core values of access, equity, quality, and fiscal responsibility as touchstones for your thinking.
- Look to the future. Envision and articulate a means to benefit students and the people of Texas through the use of technology in the educational process.
- Take a statewide perspective. Consider the needs of those institutions which are leaders in the use of educational technology and communications, but pay special attention to those who are just beginning or have yet to participate.
- Remember the needs of our partners -- public schools, libraries, health organizations. Bring forth a plan which provides for seamless communication and access to resources.
- Seek help and involve others in the process. Draw on librarians, public school representatives, other state agencies, and private industry for information and advice. Seek institutional comment.
- To allow consideration by the Board at its April meeting, set a target date of March 1, 1996 for completion of the plan.

Kenneth A. Ashworth
Commissioner of Higher Education

Appendix IV

Appropriations Rider to House Bill 1 of the 74th Texas Legislature

Sec. 35. Contingent upon passage of HB 2128, or similar legislation, funding to all public institutions and agencies of higher education for: telecommunications equipment and infrastructure needed for distance learning, library information sharing, and telemedicine services; telecommunications training of faculty and staff; development of distance learning materials and curriculum; and other related telecommunications projects and initiatives shall be provided from the Telecommunications Infrastructure Fund. Any general revenue funding for such items shall be reduced accordingly.

Appendix V

INSTRUCTIONAL TELECOMMUNICATION STATUS REPORT
UNIVERSITIES & HEALTH SCIENCE CENTERS
November 1995

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95	COURSES TAUGHT 1992-93 1993-94 1994-9	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
ANGELO STATE UNIVERSITY	NONE				
EAST TEXAS STATE UNIVERSITY	INTERACTIVE	MESQUITE MT PLEASANT	EDUCATION 12 PSYCHOLOGY 03 BUSINESS 03 OTHER 02	- - 20	- - 134
EAST TEXAS STATE UNIV AT TEXARKANA	NONE				
LAMAR UNIVERSITY AT BEAUMONT	INTERACTIVE BROADCAST	BUNA	EDUCATION 02 ENGLISH 03 SOCIAL SCIENCES 02	- - 07	- - 30
LAMAR UNIVERSITY AT PORT ARTHUR	NONE				
LAMAR UNIVERSITY AT ORANGE	NONE				
MIDWESTERN STATE UNIVERSITY	BROADCAST INTERACTIVE	HOMES	SOCIAL SCIENCES 06 PSYCHOLOGY 02 OTHER 01	- 09 09	- 511 387

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95		COURSES TAUGHT 1992-93 1993-94 1994-9	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
PRAIRIE VIEW A&M UNIVERSITY	INTERACTIVE	COLLEGE STATION	NURSING	- - 05	- - 05	- - 32
SAM HOUSTON STATE UNIVERSITY	COMPUTER		NONE			
SOUTHWEST TEXAS STATE UNIVERSITY	INTERACTIVE BROADCAST		NONE			
STEPHEN F AUSTIN STATE UNIVERSITY	INTERACTIVE		NONE			
SUL ROSS STATE UNIVERSITY	NONE					
TARLETON STATE UNIVERSITY	INTERACTIVE		NONE			
TEXAS A&M INTERNATIONAL UNIVERSITY	INTERACTIVE		NONE		1 - -	14 - -
TEXAS A&M UNIVERSITY-CORPUS CHRISTI	INTERACTIVE	TEMPLE, LAREDO, WESLACO	NURSING	16	1 14 16	61 237 210
TEXAS A&M UNIVERSITY-KINGSVILLE	INTERACTIVE BROADCAST	STEPHENVILLE CANYON	PHYSICAL SCIENCES	01	9 11 1	66 98 02
TEXAS A&M UNIVERSITY COLLEGE STATION	INTERACTIVE	GALVESTON, CORPUS CHRISTI SAN ANTONIO	EDUCATION OTHER	03 02	06 13 05	290 283 161

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95	COURSES TAUGHT 1992-93 1993-94 1994-9	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
TEXAS SOUTHERN UNIVERSITY	NONE				
TEXAS TECH UNIVERSITY	INTERACTIVE VIDEOTAPE BROADCAST	AMARILLO, EL PASO, HOMES	EDUCATION 04 ENGINEERING 11 COMPUTER SCIENCE 01	10 17 16	204 123 91
TEXAS WOMAN'S UNIVERSITY	INTERACTIVE		NONE		
UT ARLINGTON	INTERACTIVE VIDEOTAPE	NORTH TEXAS BUSINESS AND INDUSTRY, I.E., LTV, MOTOROLA, BOEING, TI; NURSING TO WACO, PARIS & DENISON SOCW TO TYLER AND CANYON	ENGINEERING 55 COMPUTER SCIENCE 07 NURSING 11 OTHER 02	86 79 75	1,326 1,416 1,244
UT AUSTIN	NONE				
UT BROWNSVILLE	NONE				
UT DALLAS	INTERACTIVE		NONE		
UT EL PASO	INTERACTIVE		NONE		
UT SAN ANTONIO	INTERACTIVE	EDINBURG	ENGINEERING 02 BUSINESS 01	- 02 03	- 59 47

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95		COURSES TAUGHT 1992-93 1993-94 1994-9	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
UT TYLER	INTERACTIVE	LONGVIEW, MEXIA, ATHENS, KILGORE, PANOLA, NAVARRO, PALESTINE	SOCIAL SCIENCES/HIST EDUCATION BUSINESS ENGINEERING RELATED ENGLISH NURSING LAW AND LEGAL COMMUNICATIONS MATH PROTECTIVE SERVICES FOREIGN LANGUAGE 02 OTHER	12 11 09 05 03 03 03 02 02 02 02	- 40 56	- 474 416
UT PAN AMERICAN	INTERACTIVE	BROWNSVILLE, SAN ANTONIO, RAYMONDVILLE	EDUCATION	02	02 02 02	39 22 18
UT PERMIAN BASIN	NONE					
UNIVERSITY OF HOUSTON	INTERACTIVE BROADCAST	HOUSTON AREA, ISD'S BUSINESS & INDUSTRY HOMES	ENGINEERING EDUCATION ENGLISH PSYCHOLOGY SOCIAL SCIENCE OTHER	14 07 07 04 04 04	32 36 40	755 926 1,379
UNIVERSITY OF HOUSTON - CLEAR LAKE	INTERACTIVE		NONE			
UNIVERSITY OF HOUSTON DOWNTOWN	BROADCAST INTERACTIVE	HOMES	SOCIAL SCIENCES	01	- - 01	- - 52

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95	COURSES TAUGHT 1992-93 1993-94 1994-9	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
UNIVERSITY OF HOUSTON VICTORIA	NONE				
UNIVERSITY OF NORTH TEXAS	INTERACTIVE	NORTH TEXAS BUSINESS AND INDUSTRY, I.E., TX INSTRUMENTS, BELL, COMMANCHE PEAK NUCLEAR PLANT	SCIENCE TECHNOLOGY 02 OTHER 04	08 02 06	23 02 21
WEST TEXAS A&M UNIVERSITY	INTERACTIVE		NONE		
TAMU HSC	NONE				
TAMU COLLEGE OF VET MEDICINE	INTERACTIVE		NONE		
TTU HSC				-	-
SCHOOL OF ALLIED HEALTH	INTERACTIVE	ODESSA, AMARILLO	PHYSICAL THERAPY 07 OCCUPATIONAL THERAPY 12	- 21	- 757
SCHOOL OF NURSING	INTERACTIVE	ODESSA	NURSING 05	- - 05	- - 42
UT SOUTHWEST MEDICAL CENTER DALLAS	NONE				

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95	COURSES TAUGHT 1992-93 1993-94 1994-9	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
UTHSC-HOUSTON	NONE				
UT SCHOOL OF NURSING - SAN ANTONIO	INTERACTIVE	BROWNSVILLE LUBBOCK	NURSING	07 06 07	66 18 48
UT SCHOOL OF NURSING-GALVESTON	INTERACTIVE	HOUSTON NACOGDOCHES	NURSING 05	- 01 04	- 13 203
UNT HSC FORTH WORTH	NONE				

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95	COURSES TAUGHT 1992-93 1993-94 1994-9	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
	TOTAL		ENGINEERING 73 EDUCATION 59 NURSING 51 SOCIAL SCIENCES 24 BUSINESS 13 ENGLISH 13 OCCUPATIONAL THERAPY 12 PSYCHOLOGY 09 COMPUTER SCIENCE 08 PHYSICAL THERAPY 07 ENGINEERING RELATED 05 LAW & LEGAL 03 FOREIGN LANGUAGES 02 COMMUNICATIONS 02 PROTECTIVE SERVICES 02 SCIENCE TECHNOLOGY 02 PUBLIC ADMIN/SVCS 02 OTHER 12 * A course is counted only once if taught at more than one reception site	162 232 299	2,778 4,182 5,274

INSTRUCTIONAL TELECOMMUNICATION STATUS REPORT
COMMUNITY AND TECHNICAL COLLEGES
November 1995

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95	COURSES TAUGHT 1992-93 1993-94 1994-95	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
ALAMO COMMUNITY COLLEGE DISTRICT Palo Alto College San Antonio College St. Philips College	BROADCAST	HOMES	GEN ACADEMIC 19 VOCATIONAL 01	14 18 20	3,698 4,016 3,845
ALVIN COMMUNITY COLLEGE	BROADCAST	HOMES	GEN ACADEMIC 02	- - 02	- - 66
AMARILLO COLLEGE	BROADCAST	HOMES	GEN ACADEMIC 20 VOCATIONAL 02	- 18 22	- 689 1,281
ANGELINA COLLEGE	BROADCAST	HOMES	GEN ACADEMIC 03	2 2 3	124 168 215
AUSTIN COMMUNITY COLLEGE	BROADCAST INTERACTIVE COMPUTER	HOMES	GEN ACADEMIC 30 VOCATIONAL 23	- 35 53	- 5,978 7,145

71 72

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95		COURSES TAUGHT 1992-93 1993-94 1994-95	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
BEE COUNTY COLLEGE	NONE					
BLINN COLLEGE	BROADCAST		NONE			
BRAZOSPORT COLLEGE	NONE					
CENTRAL TEXAS COLLEGE	BROADCAST INTERACTIVE	HOMES	GEN ACADEMIC VOCATIONAL	59 01	- 6 6	- 547 525
CISCO JUNIOR COLLEGE	NONE					
CLARENDON COLLEGE	BROADCAST		NONE			
COLLEGE OF THE MAINLAND	NONE					
COLLIN COUNTY COMMUNITY COLLEGE DISTRICT	BROADCAST	HOMES	GEN ACADEMIC VOCATIONAL	11 02	10 11 13	1,059 1,145 1,444

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95		COURSES TAUGHT 1992-93 1993-94 1994-95	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
DALLAS COUNTY COMMUNITY COLLEGE DISTRICT Brookhaven College Cedar Valley College Eastfield College El Centro College Mountain View College North Lake College Richland College	BROADCAST INTERACTIVE	HOMES	GEN ACADEMIC VOCATIONAL	117 14	133 136 131	11,155 10,066 8,885
DEL MAR COLLEGE	BROADCAST	HOMES	GEN ACADEMIC VOCATIONAL	09 02	10 08 11	969 334 689
EL PASO COUNTY COMMUNITY COLLEGE DIST	INTERACTIVE BROADCAST	HOMES	GEN ACADEMIC VOCATIONAL	11 03	14 13 14	974 804 1,030
FRANK PHILLIPS COLLEGE	INTERACTIVE BROADCAST	HOMES, DALHART, CANADIAN, PERRYTON	GEN ACADEMIC VOCATIONAL	15 04	21 19 19	289 206 202
GALVESTON COLLEGE	INTERACTIVE BROADCAST	HOMES, HIGH ISLAND ISD	GEN ACADEMIC	11	11 11 11	375 359 349
GRAYSON COUNTY COLLEGE	BROADCAST	HOMES	GEN ACADEMIC VOCATIONAL	14 01	9 14 15	171 449 454

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95	COURSES TAUGHT 1992-93 1993-94 1994-95	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
HILL COLLEGE	NONE				
HOUSTON COMMUNITY COLLEGE Central College College w/o Walls Northeast College Northwest College Southeast College Southwest College	BROADCAST INTERACTIVE COMPUTER	HOMES	GEN ACADEMIC 21 VOCATIONAL 04	13 21 25	2,763 3,504 3,443
HOWARD COUNTY JUNIOR COLLEGE	BROADCAST		NONE		
KILGORE COLLEGE	NONE				
LAREDO JUNIOR COLLEGE	NONE				
LEE COLLEGE	BROADCAST		NONE		
MCLENNAN COMMUNITY COLLEGE	BROADCAST		NONE		
MIDLAND COLLEGE	NONE				

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95		COURSES TAUGHT 1992-93 1993-94 1994-95	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
NAVARRO COLLEGE	BROADCAST	HOMES	GEN ACADEMIC VOCATIONAL	08 02	10 10 10	461 423 341
NORTH CENTRAL TEXAS COMMUNITY COLLEGE	BROADCAST	HOMES	GEN ACADEMIC	07	03 07 07	142 201 220
NORTH HARRIS MONTGOMERY COLLEGE DISTRICT Kingwood College Montgomery College North Harris College Tomball College	INTERACTIVE BROADCAST	HOMES	GEN ACADEMIC VOCATIONAL	08 01	12 07 09	708 626 746
NORTHEAST TEXAS COMMUNITY COLLEGE	NONE					
ODESSA COLLEGE	BROADCAST	HOMES	GEN ACADEMIC	09	10 12 09	778 504 555
PANOLA JUNIOR COLLEGE	NONE					
PARIS JUNIOR COLLEGE	NONE					
RANGER JUNIOR COLLEGE	NONE					

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95		COURSES TAUGHT 1992-93 1993-94 1994-95	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
SAN JACINTO COLLEGE DISTRICT Central Campus North Campus South Campus	BROADCAST	HOMES	GEN ACADEMIC VOCATIONAL	08 02	09 09 10	573 577 698
SOUTH PLAINS COLLEGE	NONE					
SOUTH TEXAS COMMUNITY COLLEGE	NONE					
SOUTHWEST TEXAS JR. COLLEGE	NONE					
TARRANT COUNTY JR COLLEGE DISTRICT Northeast Campus Northwest Campus South Campus	BROADCAST COMPUTER	HOMES	GEN ACADEMIC VOCATIONAL	77 18	91 91 95	12,211 11,048 10,064
TEMPLE JUNIOR COLLEGE	NONE					
TEXARKANA COMMUNITY COLLEGE	NONE					
TEXAS SOUTHMOST COLLEGE	BROADCAST INTERACTIVE	HOMES, UT PAN AMERICAN	GEN ACADEMIC VOCATIONAL	06 02	03 03 08	91 39 178

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95	COURSES TAUGHT 1992-93 1993-94 1994-95	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
TEXAS STATE TECHNICAL INSTITUTES TSTC - Amarillo TSTC - Harlingen TSTC - Sweetwater TSTC - Waco	NONE				
TRINITY VALLEY COMMUNITY COLLEGE	BROADCAST	HOMES	GEN ACADEMIC 06 VOCATIONAL 02	- - 08	- - 344
TYLER JUNIOR COLLEGE	BROADCAST	HOMES	GEN ACADEMIC 11 VOCATIONAL 01	12 11 12	2,803 2,816 2,051
VERNON REGIONAL JUNIOR COLLEGE	NONE				
VICTORIA COLLEGE	INTERACTIVE		NONE		
WEATHERFORD COLLEGE	NONE				
WESTERN TEXAS COLLEGE	NONE				
WHARTON COUNTY JUNIOR COLLEGE	BROADCAST		NONE		

S3

S4

INSTITUTION	DELIVERY MODE(S) AUTHORIZED	RECEPTION SITES TO WHICH INSTRUCTION WAS SENT IN 1994-95	*TYPE & NUMBER OF COURSES REPORTED TAUGHT IN 1994-95	COURSES TAUGHT 1992-93 1993-94 1994-95	STUDENT ENROLLMENT 1992-93 1993-94 1994-95
TOTALS			GEN ACADEMIC 428 VOCATIONAL 85 * A course is counted only once if sent to more than one reception site.	387 462 513	39,341 44,499 44,770